

so. The chimera of one age is often the truism of the next. Let us only call upon our friends at Edinburgh, before they separate for another year, to take this great subject into consideration, and to weigh its claims on their activity. Many a solitary teacher will be cheered, many a half-abandoned scheme will be preserved and furthered, if not by the certainty of their support, yet at any rate by the knowledge of their sympathy.

THE APPROACHING TOTAL SOLAR ECLIPSE

WE regret that we have, as yet, nothing very definite to announce in addition to what has been already stated with reference to the observations of the Total Solar Eclipse of the 12th of December next. We believe that an appeal is about to be made to Government, and if this be so, we may trust that anything that may be asked in the interests of Science will readily be granted by the Government. It is unfortunate that the Astronomer Royal's official position prevents his joining in the request, for his experience in connection with the large expenditure (10,000*l.* has already been voted) incurred by him for the approaching observation of the Transit of Venus, would be valuable in showing the necessity for the sum now required. This amounts only to a few hundreds in excess of the sum saved by the rigid economy practised by the Committee appointed to organise the arrangements connected with the late expedition.

We trust that the proposed arrangements will be brought before the British Association, in order that the influence of that important body may be made to bear upon this matter. We have recently shown the important results obtained by the late observations. It seems clear that the weather prospects for the approaching event are good, while recent calculations made by Mr. Hind show that the totality in Ceylon is much longer than had been at first imagined, amounting to as much as $2^m 11^s$ for Trincomalee, and therefore longer in the central line a few miles to the north. The accompanying map shows approximately the shadow path over India, and gives us good ground for congratulating ourselves that there are already in that country such observers as Tennant, Pogson, Herschel, Hennessy, and others, ready to occupy the best stations. The appeal made to Government includes funds for an expedition to Ceylon, under the charge of Mr. Lockyer, who has been requested by the Royal Astronomical Society to undertake spectroscopic observations there, while M. Janssen will probably take up his station in Java. We have already stated that a strong party from Melbourne and Sydney will observe in the north of Australia. All then is in order, provided our scientific leaders will put their shoulders to the wheel.

NOTES

THE American Association for the Advancement of Science, which meets a fortnight later than our own at Indianapolis, is modelled in most respects after the pattern of the parent institution, but presents some features which the managers of our own Association may do well to take into consideration. The arrangements with regard to the opening address, sectional proceedings, &c., are very similar, the following being the officers for the Indianapolis meeting:—President, Prof. Asa Gray, of

Cambridge; Vice-president, Prof. George F. Barker, of New Haven; Permanent Secretary, Prof. Joseph Lovering, of Cambridge; General Secretary, Mr. F. W. Putman, of Salem; Treasurer, Mr. Wm. S. Vaux, of Philadelphia. Special convenience will be provided for microscopists in relation to the exhibition and care of any instruments or apparatus, a suite of rooms having been secured in the State House for their special use. It will be remembered that the same thing was attempted at the Liverpool meeting, but in rather a private and unacknowledged manner. Excursions are arranged to Terre Haute, a distance of seventy-three miles, including a visit to the celebrated block coal field and blast furnaces of Clay county, and to New Albany on the Ohio river, where there are a number of interesting manufactories, among them the only finishing plate-glass works in the United States. Special arrangements have been made as to terms for the accommodation of the members of the Association at hotels and boarding-houses, and it is expected that all the railroads will carry the visitors at half fares.

ALTHOUGH the Report of the Science and Art Department in the year 1870 is not yet published, we believe that the following chief results, taken from the *Times*, may be relied upon as accurate. The numbers who during 1870 have attended the schools, museums, and other institutions receiving Parliamentary aid, considerably exceed those of 1869. There is a very large increase in the number of persons receiving instruction in science applicable to industry, which has risen from 24,865 in 1869 to 34,283 in 1870, or upwards of 37 per cent. At the Royal School of Mines there were 17 regular and 124 occasional students, at the Royal College of Chemistry 121 students, at the Royal School of Naval Architecture there were 40, and at the Metallurgical Laboratory 24. The evening lectures at the Royal School of Mines were attended by 2,574 artisans, school teachers, and others; and 243 science teachers attended the special courses of lectures provided for their instruction. At the Royal College of Science, Ireland, there were 17 associate or regular students and 21 occasional students. The various courses of lectures delivered in connection with the department in Dublin were attended by 1,152 persons, and at the Evening Popular Lectures, which were given in the Edinburgh Museum of Science and Art during the session 1869-70, there was an attendance of 1,195. The total number of persons who received direct instruction as students or by means of lectures in connection with the Science and Art Department in 1870 was upwards of 254,000, showing an actual increase as compared with the number in the previous year of 67,000, or nearly 36 per cent., and an increase in the rate of progress of 8 per cent.; the numbers in 1869 having been nearly 28 per cent. higher than in 1868. The museums and collections under the superintendence of the department in London, Dublin, and Edinburgh, have been visited during the past year by 1,847,929 persons, showing an increase of 49,087 on the number in 1869. As we have said before, it is impossible to over-estimate the importance of the work which is being done.

THE correspondence between the Royal Commission on Scientific Instruction and the Advancement of Science and the Science and Art Department on the subject of the transfer of the School of Mines to South Kensington, has been presented to Parliament.

THE assertion made by a contemporary relative to the endowment at University College of a De Morgan professorship of mathematics, has given rise to the statement by Prof. T. Hewitt Key, to the effect that he now withdraws the proposal, not merely because it is said by the family to be at variance with the expressed wishes of the deceased, but more because it has been hinted that he has been unworthily "using Prof. de Morgan's name against such expressed wishes for the emolument of the college." The endowment of a mathematical chair still remains as an object to which his best energies will be applied.

Prof. Key points out that the doctrine is now practically admitted that for all chairs in a college of any pretensions a fixed salary is essential, and that the principle has been recognised in Owens College, Manchester, the Queen's College in Ireland, the Government School of Mines, and the new Indian College for Engineering.

At an extraordinary General Meeting of the members of University College held on Saturday last, the Right Hon. Lord Belper, LL.D., F.R.S., was unanimously elected President of the College in the place of the late Mr. George Grote. At a session of the council, on the same day, the following appointments were made:—Mr. W. K. Clifford, Fellow of Trinity College, Cambridge, to be Professor of Applied Mathematics and Mechanics; Prof. H. C. Bastian, M.D., F.R.S., to be Physician to University College Hospital; Mr. Berkeley Hill, M.B., Mr. Christopher Heath, and Mr. Marcus Beck, M.S., M.B., to be teachers of Practical Surgery. The Sharpey Scholarship, recently established for the promotion of the study of Biological Science in the college, was conferred upon Mr. E. A. Schäfer.

UNIVERSITY COLLEGE, London, has recently been enriched by several valuable donations and legacies. Mr. Grote left 6,000*l.* for the endowment of a chair of Mental Philosophy, and Mr. James Yates legacies to be similarly applied for the teaching of Geology and Archæology. The treasurer of the College has given an endowment of 200*l.* for five years for the chair of Applied Mathematics, and the late Prof. Graves left a legacy to the College, without a rival of its kind, in the shape of a Mathematical Library, consisting of more than 10,000 volumes, besides some 500 pamphlets.

THE Senate of University College has appointed as its Professor of Hindustani, Kazi Shahabudeen Ibrahim. This gentleman is an accomplished scholar, and held a high position in our service in India. He was afterwards Dewar of the Rajah of Kutch, and is now resident for him in London. He also acts as hon. secretary of the East India Association. Kazi Shahabudeen being a thorough master of our own language, has a great advantage, and we may indeed observe that the progress of English studies in India ought greatly to promote those of the Indian languages in England. We can now get men having literary proficiency in their own languages, and that acquaintance which few but a native can attain, while they have the full power of communicating their knowledge to students in our colleges.

In an article which will be found elsewhere, we allude to the approaching Total Eclipse of the Sun. On this subject we may refer to a very interesting letter which Mr. Hind has recently addressed to the *Times* on the next Total Solar Eclipse which will be visible in England. Our readers will gather that we shall have some time to wait. Mr. Hind tells us that in the year 1954, June 30, the zone of totality just touches the British Isles, and adds "to discover an eclipse that will be total in England, I have found it necessary to continue the calculations to nearly the close of the same century. Such an eclipse (according to my investigation) will not occur until the 11th of August, 1999, when the circumstances will be nearly as follows:—The central and total eclipse will enter upon the earth's surface in the southern part of the Gulf of Mexico; thence traversing the Atlantic, it meets the English coast at Padstow, in Cornwall, and crossing the south of Devon enters the Channel at Torquay (which will be the most favourable place for observation in this country), and passing over the Eddystone, reaches France about fifteen miles east of Dieppe. It will be central and total, with the sun on the meridian some twenty-five miles south-west of Pesth, and traversing Asia Minor, Persia (at Ispahan), &c., will finally leave the earth's surface in the Bay of Bengal. At Torquay the first contact of limbs, or commencement of the eclipse, occurs at

8.23 A.M. local mean time, and the last contact at 11.20 A.M. Totality begins at 10h. 0m. 43s., with the sun at an altitude of 48°, and continues 2m. 4s. At Plymouth the duration of total eclipse is 1m. 58s., at Weymouth 1m. 55s. The southern part of the Isle of Wight falls within the northern limit of totality according to my calculation." Further, on the subject of the last Total Solar Eclipse visible in London, which occurred on the 3rd of May, 1715, and was successfully observed in the metropolis and at many other English stations, Mr. Hind states, it is "necessary to look further back than the year 1140 for the total solar eclipse in London next preceding that of 1715. I greatly doubt if, excepting the eclipse of August 11, 1999, described above, there can be any total solar eclipse visible in England for two hundred and fifty years from the present time."

THE grounds of the Royal Observatory, Greenwich, are now being rapidly occupied with the temporary observatories and instruments which are to be used for the observations of the Transit of Venus in 1874. We could wish that equal energy were shown in arrangements for other observations which are quite as important as those in question.

THE following are the names of the successful candidates in the competition for the Whitworth Scholarships, 1871, in the Science and Art Department:—Edmund F. Mondy, Rotherhithe; Samuel Anglin, Manchester; George Smith, Birmingham; John Yeo, Portsmouth; Henry H. Greenhill, Portsea; John Armitage, Oldham; William Lee, London; Samuel A. Kirkby, Cambridge; Benjamin A. Raworth, Manchester; George C. V. Holmes, Sydenham.

THE French weekly scientific journal, *Les Mondes*, entered, with its last number, on its 25th volume.

THAT excellent body, the Smithsonian Institution, Washington, has recently issued its report for the year 1869, in addition to which we have, under the same cover, Bertrand's paper on the Life and Works of Kepler, Arago's Eulogy on Thomas Young, Memoirs of Auguste Bravais and von Martius, a paper on the Chemistry of the Earth by Sterry Hunt, another on the Electrical Currents of the Earth by Matteucci, another on the Phenomena of Flight by Marey, and so on,—we really have not space to name all the titles,—and we have already said enough to indicate the extreme value of the volume. Among recent memoirs and papers published by the same Institution, we may mention a paper on the magnetic survey of Pennsylvania by Dr. Bache, on the Glendon mummy case by Dr. Pickering, and on the phenomena and laws of aurora borealis by Loomis.

WE are glad to see that in the list of Civil Service Pensions just issued, the claims of Science have been recognised by the grant of 100*l.* to Mr. Charles Tilston Beke, in consideration of his geographical researches, and especially of the value of his explorations in Abyssinia; and 150*l.* to Mrs. Emily Coles, widow of Captain Cowper Phipps Coles, in consideration of her husband's services as inventor of the turret ship system.

THE *Revue Scientifique* publishes an account of the chemical investigations and works of the late Prof. Payen, the most important of which are as follows:—In 1824 he made his first investigations on the value of manures; in 1830 he presented to the Society of Agriculture a paper on the means of utilising all the parts of dead animals in the country; in 1836 he read a memoir on the elementary composition of starch in different plants; in 1837 he established the composition of dextrine from its definite combinations with oxide of lead and baryta; and in the same year he read a paper on the distribution of nitrogenous matters in the organs of vegetables; in 1838 he presented a very important memoir on the composition of woody tissue, and pointing out the distinction between cellulose and starch: in 1841 he

prepared a memoir, in conjunction with M. Boussingault, on the relative value of different manures; in 1847 a paper on sugar in beet-root; in 1852 two very complete memoirs on caoutchouc and gutta-percha, their chemical composition and different characters; in 1859 another paper on starch and cellulose; in 1861 one on dextrine and glucose; in 1867 a paper on the constitution and structure of woody tissue; besides a large number of others on economical and vegetable chemistry. As separate works, Prof. Payen published a compendium of theoretical and practical agriculture, a compendium of industrial chemistry, a work on the diseases of the potato, beet, corn, and wine, a treatise on the distillation of beet, a work on alimentary substances, and a report on the vegetable and animal substances made to the French Committee of the Jury of the International Exhibition in London. He was appointed Professor of Industrial Chemistry at the Central School in 1830, and at the Conservatoire des Arts et Métiers in 1839, and was elected member of the Institute in 1842.

WE are informed by Dr. Edward L. Moss, R.N., that within the last few days he has obtained several specimens of *Appendicularia furcata* and *acrocerca* in the incoming tide off the east coast of Portland. They have in every instance been captured in their "Haus," or have formed it shortly after capture, and have remained in it as long they were left undisturbed. These rare and interesting visitors to our tidal waters were accompanied by oceanic diatoms which Dr. Moss had never before seen near the English coast.

THE sixth annual meeting of the Quekett Microscopical Club was held on Friday evening last at University College. By the annual report of the committee read, it appeared that the number of the members now amounts to 550. The president, Dr. L. S. Beale, F.R.S., gave the usual presidential address. At the election of officers which followed, Dr. L. S. Beale was elected president for the year 1871-72; for vice-presidents, Dr. Robert Braithwaite, F.L.S., Mr. Arthur E. Durham, F.R.C.S., Mr. Charles J. Leaf, F.R.M.S., Mr. Henry Lee, F.L.S.; for four members of committee, Messrs. W. H. Golding, Thomas Greenish, E. Marks, and F. Oxley; for treasurer, Mr. Robert Hardwicke, F.L.S.; hon. secretary for foreign correspondence, Mr. M. C. Cooke, M.A.; hon. secretary, Mr. T. Charters White.

THE Royal Archæological Institute has just held its annual meeting at Cardiff, under the presidency of the Marquis of Bute, who, in his inaugural address, dwelt on the many objects of archæological interest in which South Wales abounds, especially as the locality of some of the best known incidents of the Arthurian romances. The historical section was presided over by Mr. G. A. Freeman, who delivered a very interesting address on the early ethnology of South Wales. A long excursion was undertaken by the members into Monmouthshire, the principal objects of interest being Caldicot Castle, Caerwent (the Roman Venta Silurum) and Chepstow.

THE annual meeting of the Institution of Mechanical Engineers was held last week at Middlesbrough, Mr. John Ramsbottom, of Crewe, being president of the meeting. Papers were read by Mr. William Crossley, of the Askham Ironworks, Lancashire, on the manufacture of hæmatite iron; by Mr. J. Lowthian Bell, upon the preliminary treatment of materials used in the blast furnace; by Mr. Hill, on an improved compound cylinder blowing engines recently erected at the Lackenby Iron Works, Middlesbrough; a description of the geological features of Cleveland by Mr. John Jones, secretary to the iron trade of the district; by Mr. John A. Haswell, of Gateshead, describing the break drums and the mode of working at the Ingleby incline on the Rosedale branch of the North Eastern Railway; by Mr.

Jeremiah Head, of Middlesbrough, on a simple construction of steam-engine governor, having a close approximation to perfect action; and by Mr. Charles Cochran, of Middlesbrough, on steam boilers with small water-space and Roots' tube boiler. The many objects of interest in the neighbourhood were also visited by the members.

THE BRITISH ASSOCIATION MEETING AT EDINBURGH

EDINBURGH, Wednesday Morning

A VERY important point in the peregrination of the British Association lies in the fact that the men of science are now assembled in one of the foci of commercial enterprise, now in an old centre of learning, and now in a locality which, although coming under neither of these heads, yet gives large scope for benefiting the surrounding region. That the Association should meet at Edinburgh at this present juncture is extremely fortunate. In the first place Science was largely taught at Edinburgh by the aid of State-endowed professors before either of our old English Universities thought it worth while to investigate with any earnestness those branches of natural knowledge which are now recognised as not only the necessary accompaniment of a liberal education, but as the foundation of the nation's greatness. In the second place, we learn from the Edinburgh newspapers that the scientific mind of the metropolis of the North has been recently stirred on the subject of the importance of scientific research, and has addressed a memorial to the Royal Commission now sitting, urging that the point shall be strongly taken up.

It may be interesting to mention that this is the third time that the British Association has met at Edinburgh. The first time was in 1834, under the presidency of Sir Thomas Brisbane; the second in 1850, when Sir David Brewster occupied the chair. Already more than 1,300 members have entered their names, a larger number than were present at the last Edinburgh meeting.

The ample accommodation furnished by the Scotch capital is being admirably utilised by the local organisers. The Reception Room is in Parliament House; the sections meet in the University Buildings. In addition to the assemblage of our own *savans*, the following distinguished scientific foreigners are either in Edinburgh or are expected in the course of the meeting:—The Emperor of Brazil; Dr. Janssen, of Paris; Dr. Buys Ballot, of Utrecht; Prof. v. Baumhauer, of Haarlem; Prof. Van Beneden, of Louvain; Dr. D. Bierens de Haan, of Leyden; Dr. Boogaard; Dr. Colding, of Copenhagen; Prof. Delffs, of Heidelberg; Baron Desiderius; Baron Roland Eötvös, of Pesth; Don Asturo de Marcastin, of Madrid; Prof. Margo, of Pesth; l'Abbé Moigno, of Paris; Prof. Morren, of Liège; Prof. Szabó, of Pesth; Prof. Zenger, of Prague; Dr. Youmans, of New York. Of these Dr. Janssen, Prof. Van Beneden, Dr. Buys Ballot, Profs. Szabó and Zenger, and Dr. Colding, have already arrived. The University of Edinburgh has taken the opportunity of conferring the honorary degree of LL.D. on the following distinguished men of science:—Dr. Gassiot, Prof. Sylvester, Prof. Stokes, Prof. Challis, Dr. Huggins, Dr. Allen Thomson, Dr. Janssen, Prof. Van Beneden, Dr. Colding, Mr. Spottiswoode, Dr. Carpenter, Prof. Andrews of Belfast, and Dr. Paget of Cambridge.

We are enabled, through the courtesy of the officers of the Association, to give in our present number full reports of the president's inaugural address, and of the opening addresses in Sections A, B, and C. In Prof. Geikie's address we have a suitable and altogether to be commended innovation in the shape of an account of the local geology of the neighbourhood, which has been printed separately, and issued with an admirably clear map.